

Improved General Technical Score Requirements for Entry Level
0811 Cannon Crewmen
EWS Contemporary Issues Paper
Submitted by Captain R. D. Barnes
To
Major R. R. Tatum, CG 14
19 February, 2008

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 19 FEB 2008		2. REPORT TYPE		3. DATES COVERED 00-00-2008 to 00-00-2008	
4. TITLE AND SUBTITLE Improved General Technical Score Requirements for Entry Level 0811 Cannon Crewmen				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) United States Marine Corps, Command and Staff College, Marine Corps University, 2076 South Street, Marine Corps Combat Development Command, Quantico, VA, 22134-5068				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 12	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

For centuries, artillerymen have dominated the battlefield with kinetic fires. The backbone of Marine Corps artillery is the 0811 Cannoneer, the Marines who have historically operated the howitzers night and day, rain or shine, in order to provide the fire support needed by maneuver units. For the last twenty years, a cannoneer's job has been fairly straightforward: Employ the M198 155mm Medium Towed artillery piece in accordance with the technical manual. However, in recent years, the artillery community has seen its role on the battlefield change significantly due to emerging technology, operational tempo, and lessons learned in the current operating environment. An 0811 now faces the possibility of having to employ three different weapon systems throughout his career instead of one, all of which are significantly more complicated than the M198. Additionally, Marine artillerymen have officially been given the additional duty of performing civil military operations upon completion of the primary mission of providing fire support. Due to the new complicated equipment as well as new additional duties, the 0811 military occupational specialty (MOS) should have the minimum general technical (GT) score requirement raised from 90 to 95.

Background

Since it was introduced in the 1960s, the Armed Forces Vocational Aptitude Battery (ASVAB) has been a standard for

determining recruits' mental aptitude. The Marine Corps utilizes the general technical (GT) portion of the ASVAB, which is a combination of scores from arithmetic reasoning and verbal expression portions, to determine what military occupational specialties an entry level Marine is qualified to fill.¹

New Equipment

From the early 1990s until 2005, the M198 was the only weapon system employed by artillerymen in the Marine Corps. In May of 2005, 3rd Battalion, 11th Marine Regiment began fielding what is to be the future of Marine cannon artillery, the M777 Lightweight Howitzer.² Initially, the M777 was not significantly different from the M198, as the tactics, techniques and procedures (TTPs) for firing are very similar to its predecessor. However, since the initial fielding of the M777, designers added capabilities to revolutionize towed artillery employment. The first major modification took place two years after initial fielding, officially changing the weapons designator to the M777A2. This modification was the addition of the Digital Fire Control System (DFCS) to the howitzer, causing what was previously a relatively simple weapon system to morph into something exponentially more complicated. The DFCS added several capabilities to the M777. In addition to radios,

¹ Powers, Rod "A, B, Cs of the ASVAB" <http://usmilitary.about.com/cs/joiningup/a/asvababcs.htm>

² Wikipedia, "M777 Howitzer." http://en.wikipedia.org/wiki/M777_howitzer

digital displays, and an internal GPS, an on-board fire-direction computer was added, giving the weapon itself the capability of computing technical solutions previously only performed at the battery fire direction center.

The technical firing solution involves comparing current environmental conditions to a set of standard conditions and turning target coordinates into information needed by the howitzer crew to achieve accurate fires. Previously, the fire direction center had the responsibility to keep track of all of the non-standard conditions that affect an artillery round during its ballistic flight path. 0844 fire direction control men, who have a 105 GT score requirement, track a large amount of information, including wind direction, wind speed, air temperature and density, muzzle velocity, propellant temperature, and projectile weight on a shell's point of impact. The 0844 MOS description is as follows:

Field artillery fire control men perform duties essential to the delivery of accurate artillery fire to include preparation of fire control equipment for movement and operation, performance of detailed survey operations, performance of preventative maintenance, routine testing, authorize minor repairs to survey and fire control equipment, and operation of field communication equipment. Fire control computation includes the use of computer equipment systems, plotting survey data on firing charts, determination of target coordinates, and the conversion [of] target

coordinates and observer's reports into firing data and commands.³

The majority of duties performed by the 0844 fire direction control men will now be simultaneously performed by the 0811 cannonneer on the gun with the DFCS, bringing a great deal of similarity to the specialties.

At the turn of the century, General James Jones, then Commandant of the Marine Corps, envisioned the future of Marine artillery to include a "Ground Fires Triad."⁴ The backbone would be a 155mm towed howitzer, which was later developed into the M777. However, even with all of its capabilities, the M777 would not always be the weapon of choice in every situation. Sometimes, the M777 would be too much gun for scenarios like helicopter raids; other times, even the 30 kilometer capability of a rocket-assisted projectile⁵ would not provide enough range or lethality. To complement the M777 and complete the "Ground Fires Triad," two different weapon systems were developed for the artillery community: The M327 Expeditionary Fire Support System (EFSS) and the M142 High Mobility Artillery Rocket System (HIMARS).

To accommodate HIMARS, two artillery battalions (5/11 and 2/14) were converted from their traditional role as cannon

³ United States Marine Corps, *Marine Corps Bulletin 1200: Military Occupational Specialty Marine Corps Manual*, 28 March 2007

⁴ Hollis, Patrecia, "Fixing the Marine Artillery" *Marine Corps Gazette*, December 2000

⁵ United States Army, FT-155-AO-1 Tabular Firing Table

battalions to rocket battalions. To crew the weapons system, an additional MOS was created, the 0814 HIMARS operator. HIMARS Operators are selected from the 0811 community and will complete a follow-on course once identified as having 5/11 or 2/14 as their gaining battalion.⁶ However, once they make the transition to a HIMARS battalion, Marines will not necessarily stay in the rocket community their entire career. A Marine could potentially move from a rocket unit to a cannon unit or vice-versa several times throughout his career in the Marine Corps. Additionally, the EFSS will become part of every cannon battery's table of equipment. 0811s will act as the crewmen for this new mortar system without the addition of a new MOS designator.

During initial training at Fort Sill, artillerymen learn about the three parts of the artillery system: The eyes, brains, and muscle.⁷ The eyes are artillery observers, or 0861s, who identify and locate targets and transmit information to the FDC. The brains are the fire direction control men, or 0844s, who take the coordinates and determine firing data to apply to the howitzer in order to achieve effects on target. The muscle are the cannonneers who operate the weapon systems and whose MOS description follows:

⁶ Telephone interview with Captain J. M. Moore, Marine Battery Commander, Fort Sill, Oklahoma

⁷ Class GD02BA "Artillery Ballistics," class from Officer Basic Course, Fort Sill, Oklahoma

As a member of a field artillery howitzer battery, cannoneers prepare artillery pieces and equipment for movement, combat and firing. They inspect and prepare ammunition for firing, and perform the various jobs incident to firing such as, laying for elevation and deflection, loading the piece, and handling ammunition. Field artillery cannoneers perform preventative maintenance and clean artillery pieces and equipment. They make routine tests and authorize repairs to equipment. Camouflage position, protect equipment from chemical warfare agents, and construct field fortifications.⁸

Of the three parts of the system, the only one that has experienced a significant change in the last decade has been the cannoneers.

Gone are the days of glass and iron sights, aiming circles, and voice fire commands. The current generation of weapons is exponentially more complicated than the last. Each weapon system is packed with electronics, automated hydraulics, radios, internal GPS, and internal fire direction computers. To complicate matters even more, 0811s are responsible for three weapon systems instead of just one. Additionally, the tactics, techniques and procedures for the new digitized system in all of the newer weapon system will allow for much greater dispersion between howitzers. Previously, command and control of a firing position was limited by the amount of wire a battery had in its possession, usually allowing for only 25 to 50 meters between

⁸ United States Marine Corps, *Marine Corps Bulletin 1200: Military Occupational Specialty Marine Corps Manual*, 28 March 2007

howitzers. The new digitization packages allow for guns to be several hundred meters apart, creating a new generation of command and control challenges.

The table of organization for the Marine artillery battery has not been changed to reflect the additional communications requirements of the M777A2. Each weapon will have two PRC-119 radios to enable voice and data communication with the fire direction center. All 0811 cannonners must now become familiar with the radio equipment, crypto gear, and communications procedures. Previously, 0811s had only to deal with Vietnam era wire communications via field telephones, with 0612 wiremen nearby for assistance. 0811s will now be required to perform all of the duties of an 0621 field radio operator in order to accomplish their missions. This is just one example of the additional requirements the new modern, digitized equipment has levied upon cannonneers calling for increase to the GT requirement.

Additional Duties

To complicate matters further for the artillery community, additional duties have been assigned to the discipline as a whole. ALMAR 061/05 states the "assignment of a secondary civil military operations (CMO) mission to the artillery regiments/battalions" and that "the new mission statements assign each artillery regimental headquarters and each cannon

battalion with a new secondary CMO mission.”⁹ The reasoning behind the mission change was twofold. First of all, the Marine Corps has a very limited number of civil military operations trained Marines. In fact, “the military has only about 6,000 civil affairs specialists, with 99 percent of them coming from the Army. The Marine Corps runs only two permanent civil affairs groups of about 150 Marines each – both in the Reserve.”¹⁰ The second reason was the fact that during stabilization and stability operations (SASO), outside of counter-fire duties, Marine artillerymen have been used as a slew of “provisional” roles. These include provisional infantrymen, military policemen, convoy escorts, and security forces to name a few.

Counterargument

Many will argue that nothing that has happened in the last decade has warranted improving entry level standards for artillerymen. The argument is that none of the new technology or duties are beyond the ability of Marines to adapt to and accomplish their mission effectively. When presented one at a time, the new technology and duties do not seem insurmountable with the current standards for 0811s. However, when one combine three brand new and doctrinally revolutionary weapon systems, coupled with the current and future operations tempo and duties,

⁹ United States Marines Corps, ALMAR 063/05

¹⁰ Lowe, Christian, “Hit ‘em, Then Fix ‘em – Artillerymen Get Civil Affairs Added to Job Description” *Marine Corps Times*, 19 December 2005

the ability for our artillerymen to learn quickly and adapt to new technology and TTPs is of the utmost importance.

One cannot simply look at the new weapon systems or duties alone as justification for requiring smarter artillerymen. One needs to see the addition of new systems when injected into the career of an average cannon crewman. Cannonneers must have the ability to go straight from their primary MOS school to their first duty station, where they may or may not ever practice crewing a weapon. From there, they need to be flexible enough to deploy in a civil military operations role only to come back to a HIMARS. From there, again potentially never firing a round (due to staggering ammunition costs), they may do either another deployment or go on a B-Billet. By this time, the 0811 will be a senior Sergeant or Staff Sergeant, a section chief according to the table of organization.¹¹ This section chief is expected to be the duty expert on his weapon system, which is very likely to be a weapon that he has never participated in crew drill while firing. A section chief has the final say on whether an artillery projectile, whether it is a cannon round, mortar round or HIMARS rocket.¹² To have that kind of responsibility under the scrutiny that our armed forces are operating both in CONUS

¹¹ United States Marine Corps, Table of Organization: United States Marine Corps Artillery Battery

¹² United States Marine Corps, MCWP 3-16.4, pg 15-1

training and deployments, the artillery community needs smarter artillerymen.

Conclusion

The current GT score requirement for 0811s is 90, which represents a time in the artillery community's history when a Marine was expected to learn a single weapon system, and learn it well. New systems are no longer simply a vision of the future, and new provisional duties have become more the norm than exception. To expect proficiency in all of the systems a cannonner is required to display mastery as well as perform the additional provisional duties, the GT standard for 0811s needs to be raised. The requirement needs to be raised from 90 to 95 in order to reflect the new variety of equipment, additional duties, and expectations of our cannonneers throughout their careers. With increased standards for cannonneers, one can expect an 0811 to continue to be the backbone of the artillery community, providing the Marine Corps' only true all-weather, 24-hour fire support capability for decades to come.

Bibliography

Class GD02BA "Artillery Ballistics," class from Officer Basic Course, Fort Sill, Oklahoma

Hollis, Patrecia, "Fixing the Marine Artillery" Marine Corps Gazette, December 2000

Lowe, Christian, "Hit 'em, Then Fix 'em - Artillerymen Get Civil Affairs Added to Job Description" Marine Corps Times, 19 December 2005

Powers, Rod "A, B, Cs of the ASVAB"
<http://usmilitary.about.com/cs/joiningup/a/asvababcs.htm>

Telephone interview with Captain J. M. Moore, Marine Battery Commander, Fort Sill, Oklahoma

United States Army, FT-155-AO-1 Tabular Firing Table

United States Marines Corps, ALMAR 063/05

United States Marine Corps, *Marine Corps Bulletin 1200: Military Occupational Specialty Marine Corps Manual*, 28 March 2007

United States Marine Corps, MCWP 3-16.4, pg 15-1

United States Marine Corps, *Table of Organization: United States Marine Corps Artillery Battery*

Wikipedia, "M777 Howitzer."
http://en.wikipedia.org/wiki/M777_howitzer